

Tightening torques

Nm (kpm)

Bolts for cylinder head cover (engine 615)
Nuts for cylinder head cover (engines 615, 616, 617)

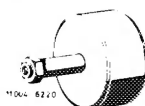
5 (0.5)
15 (1.5)

Waisted bolt for camshaft sprocket

80 (8)

Special tools

Impact extractor for bearing pin (basic unit)



116 589 20 33 00

Threaded stud M 8, 150 mm long
for impact extractor

616 589 00 34 00



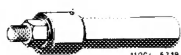
Threaded stud M 6, 150 mm long
for impact extractor

116 589 02 34 00



Threaded stud M 6, 50 mm long
for impact extractor

116 589 01 34 00



Extractor for bearing pin

115 589 20 33 00

Threaded stud M 8, 30 mm long for extractor

115 589 00 34 00



Threaded stud M 6, 30 mm long for extractor

115 589 01 34 00

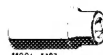


Screwdriver with tommy bar for
hexagon socket bolts
6 mm, 440 mm long

116 589 03 07 00

Socket 27 mm, 1/2" drive
to crank engine

001 589 65 09 00

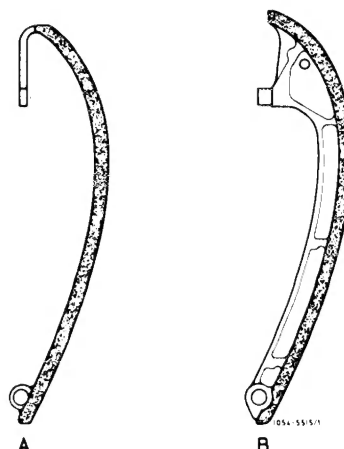


Note

There are two kinds of tension rail for these engines.
The second tension rail version (B) can also be used
in engines having the first tension rail version (A).

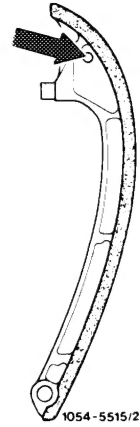
This rule does not apply, however, to cylinder heads
with chain tensioner oil pockets.

- A 1st tension rail version (steel)
- B 2nd tension rail version (lightweight)

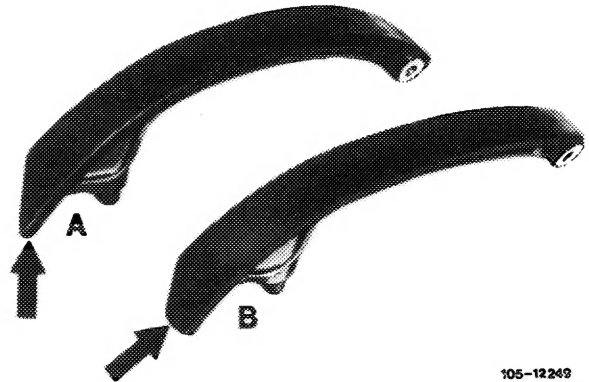


The tension rails are marked so that they cannot be confused with the tension rail for 4-cylinder gasoline engines.

The tension rail for 4-cylinder gasoline engines is broader (B) at the upper end and is not drilled there either (arrow).



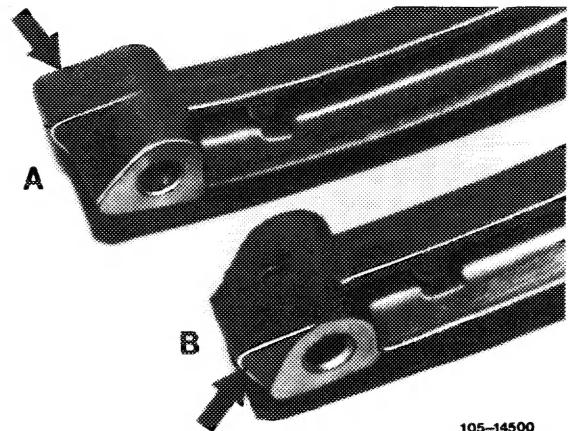
In contrast, the tension rail for diesel engines tapers off at the upper end (A) and also has an 8 mm hole there.



A Tension rail, diesel engines
B Tension rail, gasoline engines

Besides, the lower ends of the tension rails have integral lugs which cut out any risk of confusion.

The lug on the diesel engine tension rail is provided in the direction of No. 1 cylinder, and the 4-cylinder gasoline engine tension rail is to be found in the direction of the balance plate.



A Tension rail, diesel engines
B Tension rail, gasoline engines

Removal

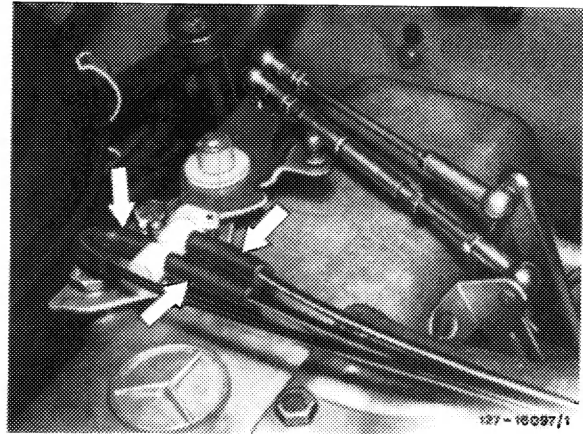
- 1 Remove radiator and fan.

2 Remove cylinder head cover.

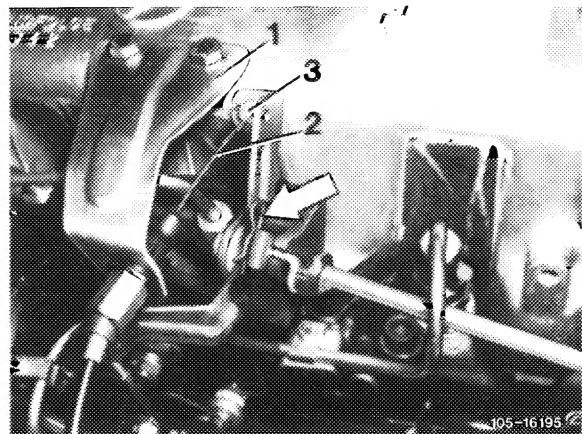
On engines with automatic transmissions and vacuum-controlled modulating pressure, additionally detach vacuum lines at switch-over valve.

Caution:

Be sure not to cross vacuum lines. The pipe unions and vacuum lines are color coded.



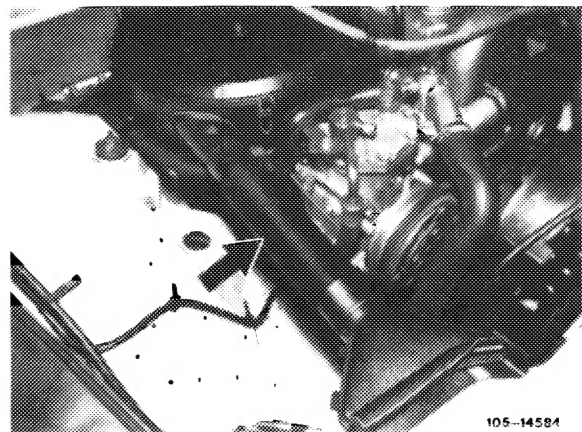
On engines with longitudinal control spindles, detach all control rods. Withdraw retainer (arrow) and force longitudinal control spindle in aft direction. Unscrew bracket (1) and unclip idle control cable (2) with plastic sleeve (3).



3 On engines with tension rail version (A) remove chain tensioner (05-310).

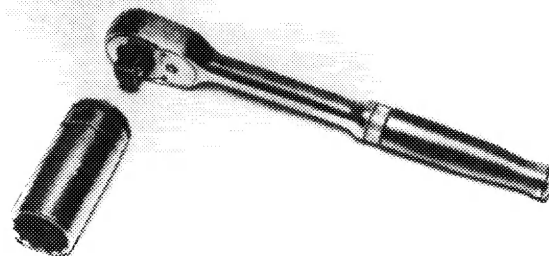
On vehicles with air-conditioners, detach York A/C compressor together with connected lines, depositing on one side. However, first remove water pump pulley, additionally removing air cleaner cover on engines with oil bath air cleaners. Drain coolant and detach thermostat body.

On engine 617.912, remove adapter at air cleaner.



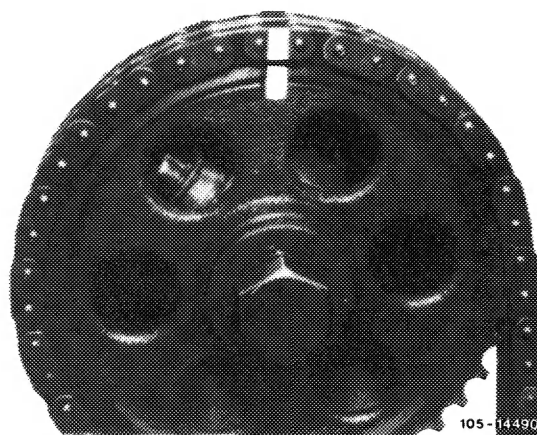
4 On engine 617 remove pulley and vibration damper, and on engine 616 take out pulley (03-340). On engine 615.940 with 12.5 mm alternator V-belt, also remove pulley.

5 Using tool combination, turn crankshaft until recess in balance plate appears at tension rail bearing pin (illustration, job No. 10).



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6 Mark positions of camshaft sprocket and timing chain to show how they fit together.

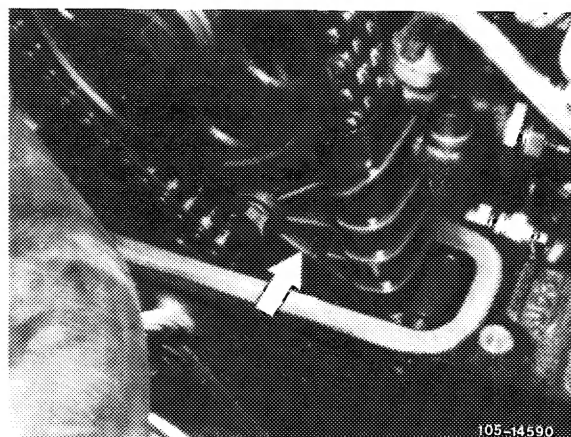


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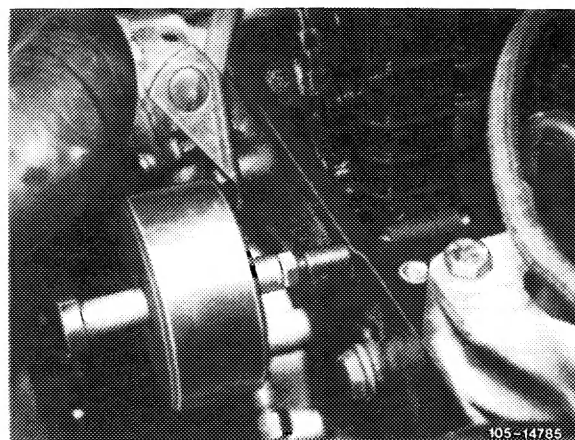
7 Remove slide rail or rails from cylinder head.

Withdraw bearing pin using impact extractor.

On vehicles with level control, detach delivery oil pump together with connected lines, depositing on one side.

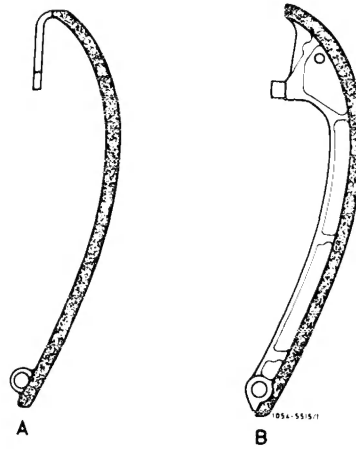


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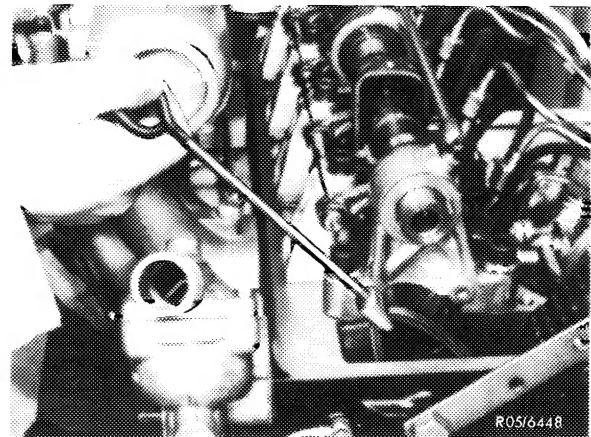
8 On engines with lightweight tension rail version (B) force back thrust pin of chain tensioner.



9 On engines with tension rail version (A) attach remover and installer as per part No. 115 589 14 61 00 to tension rail.

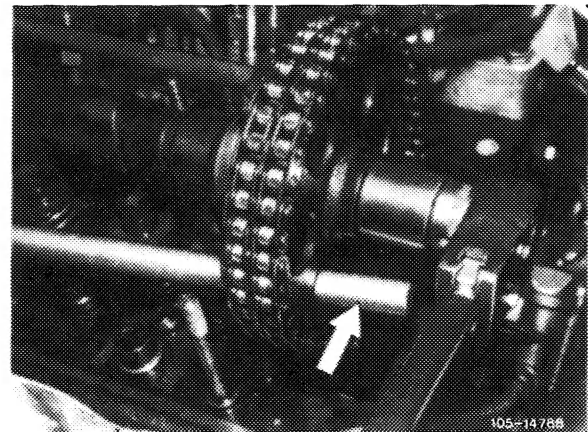
Caution:

This tool can be used only on engines with tension rail version (A).

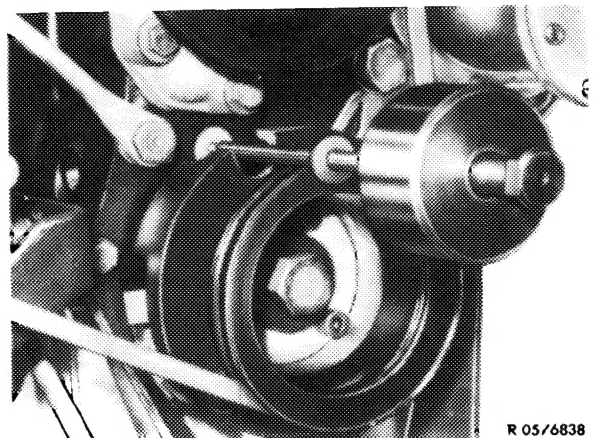


10 Remove camshaft sprocket.

To release waisted bolt secure camshaft sprocket with screwdriver or steel pin.



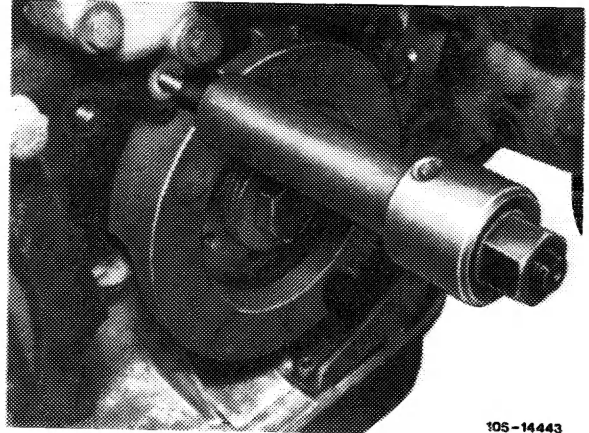
11 Withdraw bearing pin using impact extractor.



Caution:

If bearing pin is so tight that it resists removal with impact extractor it will then have to be removed using remover as per part No. 115 589 20 33 00.

- 12 Take tension rail out in upward direction.



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Installation

- 13 Coat bearing pin collar with sealant.
- 14 Position tension rail and drive bearing pin home, using impact extractor.
- 15 Place camshaft sprocket and timing chain on camshaft with reference to markings.

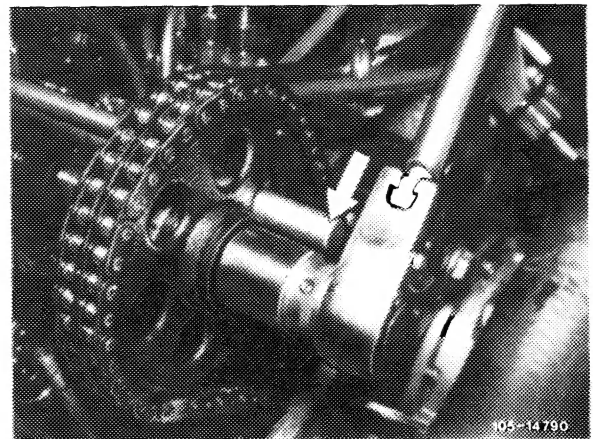
- 16 Apply waisted bolts for camshaft sprocket and torque to 80 Nm (8 kpm). For this purpose secure camshaft sprocket with screwdriver or steel pin.

- 17 Fit chain tensioner.

- 18 Fit slide rail.

- 19 Now proceed in reverse order of removal.

- 20 Fill cooling system with coolant (20-010) and then pressure-test.



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